IN THE CLAIMS

1. (Currently Amended) A method for structured document transcoding comprising:

generating, in response to receiving ~~a source document from an element of~~ a

structured document including a first ordered list of document elements in a

markup language, a source document based on a document element of the

first ordered list of document elements, the source document including a

second ordered list of document elements in the markup language~~replacing~~

~~the element to update the structured document~~;

replacing the document element with the second ordered list of document elements to

insert the source document into the first ordered list of document elements

to update the structured document;

building a document tree including a plurality of tree nodes associated with

document elements of ~~from the source document and~~ the updated structured

document;

generating a plurality of new document trees ~~from~~according to the document tree

such that the plurality of new document trees are ordered and hierarchically

linked, the new document trees being associated with new document

elements;

determining sizing parameters for one or more new tree nodes of at least one of the

new document trees; and

producing, from at least one of the new document trees, one structured

data such that it is suitable for ~~input to a browser in~~ a browser to render

in a browser device,

wherein the one or more new tree nodes including one root node and one or more leaf nodes, the determined sizing parameters of the root node satisfying constraints associated with a display area and processing capacity for the browser, each of the one or more new tree nodes except the root node having a single parent node belonging to the one or more new tree nodes and each of the one or more new tree nodes except the one or more leaf nodes having at least one child node belonging to one or more new tree nodes, and wherein each leaf node is associated with no more than one of the plurality of new document trees.

2. (Previously Presented) The method of claim 1 wherein the sizing parameters include minimum display width.

3. (Canceled)

4. (Previously Presented) A method of transcoding a source structured document in a markup language for a browser to render while satisfying constraints from a display area and processing capacity of a browser device, the constraints including a plurality of layout constraints, the method comprises:

building a document tree from the source structured document;

assigning one or more layout constraints and sizing parameters to a plurality

of tree nodes of the document tree;

splitting or partitioning an oversized tree node of the plurality of tree nodes

into one or more new tree nodes of new document trees

that a satisfy one of the plurality of layout

constraints wherein the new document trees are hierarchically linked; and

ordering the new document trees in an order consistent with a two-dimensional

navigation sequence of a display page for the source structured

document, wherein at least one new tree node of the new document trees

including sizing attributes scalable to satisfy the constraints for at least one

of the new document trees to produce one structured data such that it is

suitable for input to the browser, wherein the at least one new document tree

comprises one or more new tree nodes including one root node and one or

more leaf nodes, each new tree node except the root node having a single

parent node in the one or more new tree nodes, each of the one or more new

tree nodes except the one or more leaf nodes having at least one child node

in the one or more new tree nodes, and each leaf node belonging to no more

than one of the new document trees.

5. (Previously Presented) The method of claim 4 wherein the two-dimensional navigation

sequence is top-to-down coupled with either left-to-right or right-to-left.

6. (Canceled)

7. (Canceled)

8. (Currently Amended) The method of claim 1 wherein the generating the source

document comprises executing executable codes included in the document element to

provide dynamic document elements in the source document.

9. (Previously Presented) The method of claim 8, wherein the executable codes include script codes.

10. (Previously Presented) The method of claim 9, wherein the executing is based on a document object model according to the structured document.

11. (Currently Amended) The method of claim 1, wherein the generating the source document comprises retrieving the source document based on a link data included in the document element.

12. (Canceled)

13. (Canceled)

14. (Previously Presented) The method of claim 11 wherein the retrieving comprises sending an HTTP request according to the link data and receiving an HTTP response.

15. (Previously Presented) The method of claim 11 wherein the retrieving comprises sending an HTTPS request according to the link data and receiving an HTTPS response.

16. (Currently Amended) The method of claim 11 wherein the document element is associated with a FRAME element or an IFRAME element.

17. (Canceled)

18. (Previously Presented) The method of claim 4 wherein the partitioning comprises

selecting a set of descendant nodes of the second oversized tree node such that

at least one selected descendant node is associated with at

least one of the one or more layout constraints assigned to the second

oversized tree node;

establishing a partition tree by copying or relocating corresponding tree nodes from

the document tree to the partition tree such that

(i) at least one sub tree rooted at one of

the selected set of descendant nodes gets removed from

the document tree;

(ii) an ancestor tree node of the one of the

selected set of descendant nodes has more than one child

nodes copied from the document tree; and

(iii) ordering relationships among tree nodes of the partition

tree is the same as that of the corresponding tree nodes in

the document tree; and

inserting cross linking nodes to the partition tree and the document tree

to create a corresponding hierarchical linking relationship.

19. (Previously Presented) The method of claim 4 wherein the ordering comprises inserting

cross-linking nodes to the new document trees to cause at least one of the new document

trees resulting from the partitioning to have references to its neighboring new document

trees according to the order.

20. (Previously Presented) The method of claim 1, further comprising:

    assigning a target browser display width to the root node of the at least one

        new document tree as a maximum width allowed for the root node;

    deciding a maximum width allowed for at least one new tree node of the at

        least one new document tree given a maximum width allowed for its

        single parent node such that a minimum width sizing

        parameter assigned to the single parent node has a value no greater

        than the given maximum width;

    determining a scaling factor for the at least one new tree node; and

    applying the scaling factor to sizing attributes of new document elements

        associated with the at least one new tree node.

21-23. (Canceled)

24. (Previously Presented) The method of claim 1 wherein the generating a plurality of new

document trees comprises converting at least one tree nodes to at least one new tree nodes

associated with one or more new document elements, the one or more new document

elements being associated with a second markup language.

25. (Previously Presented) The method of claim 1 wherein the markup language is HTML.

26. (Previously Presented) The method of claim 24 wherein the second markup language is HTML, CHTML, XHTML, XML, WML or HDML.

27. (Previously Presented) The method of claim 26 wherein the converting converts the one or more tree nodes associated with FRAMESET elements into the one or more new tree nodes associated with TABLE elements.

28. (Previously Presented) The method of claim 26 wherein the converting converts the one or more tree nodes associated with FRAME elements into the one or more new tree nodes associated with TD elements.

29. (Previously Presented) The method of claim 4 wherein the one or more layout constraints assigned to the plurality of tree nodes include a vertical column or a horizontal row over a set of descendant nodes of one of the plurality of tree nodes.

30. (Previously Presented) The method of claim 4 wherein the sizing parameters comprises a scalable width, a minimum width, an image area and a character number.

31. (Previously Presented) The method of claim 4 wherein one of the sizing parameters assigned to one of the plurality of tree nodes is a cumulative summation of corresponding values of the same sizing parameter of one or more of its child nodes.

32. (Previously Presented) The method of claim 29 wherein a value of one of the sizing parameters is determined as a cumulative summation, over a set of the one or more layout

constraints assigned to the one of the plurality of tree nodes, of maximum corresponding value of the same sizing parameter within the set of descendant nodes associated with the set of the one or more layout constraints.

33. (Previously Presented) The method of claim 29 wherein one of the sizing parameters assigned to the one of the plurality of tree nodes has a value is no less than at least one corresponding value of the same sizing parameter of the set of descendant nodes associated with the vertical column constraint.

34. (Previously Presented) The method of claim 29 wherein one of the sizing parameters assigned to the one or the plurality of tree nodes has a value no less than a cumulative summation of at least one corresponding value of the same sizing parameter of the set of descendant nodes associated with the horizontal row constraint.

35. (Previously Presented) The method of claim 30 wherein the minimum width sizing parameter of the oversized tree node has a value exceeding a width threshold value associated with the one of the plurality of layout constraints.

36. (Previously Presented) The method of claim 29 wherein the splitting or partitioning modifies the horizontal row layout constraint assigned to the oversized tree node.

37. (Previously Presented) The method of claim 1 wherein the generating a plurality of new document trees comprises composing a catalog document tree, containing tree nodes linked to the new document trees, to provide a summary sizing information for at least one

new document tree and the hierarchical linking relationship amongst the new document trees.

38. (Previously Presented) The method of claim 1 wherein the structured data is a structured document in a second markup language.

39. (Previously Presented) The method of claim 1 wherein the browser device is palmtops, PDAs or data enabled cell phones wirelessly connected with a smal l display areas and processing capacities.

40. (Currently Amended) A computer readable medium encoded with a plurality of computer-executable instructions which, when executed by a processing system causes the processing system to perform a method for structured document transcoding, the method comprising:

        generating, in response to receiving ~~a source document from an element of~~ a

                structured document including a first ordered list of document elements in a

                markup language, a source document based on a document element of the

                first ordered list of document elements, the source document including a

                second ordered list of document elements in the markup language ~~replacing~~

                ~~the element to update the structured document~~;

      replacing the document element with the second ordered list of document elements

                to insert the source document into the first ordered list of document

                elements to update the structured document;

      building a document tree including a plurality of tree nodes associated with

document elements of ~~from the source document and~~ the updated structured

document;

generating a plurality of new document trees ~~from~~ according to the document tree

such that the plurality of new document trees are ordered and hierarchically

linked;

determining sizing parameters for one or more new tree nodes of at least one of the

new document trees; and

producing, from the at least one new document trees, one structured data such

that it is suitable for ~~input to~~ a browser to render in a browser device,

wherein the one or more new tree nodes including one root node and one or more leaf

nodes, the determined sizing parameters of the root node satisfying constraints

associated with a display area and processing capacity for the browser, each of the

one or more new tree nodes except the root node having a single parent node

belonging to the one or more new tree nodes and each of the one or more new tree

nodes except the one or more leaf nodes having at least one child node belonging to

one or more new tree nodes, and wherein each leaf node is associated with no more

than one of the plurality of new document trees.

41. (Previously Presented) The computer readable medium of claim 40 wherein the sizing

parameters include minimum display width.

42. (Canceled)

43. (Previously Presented) A computer readable medium encoded with a plurality of computer-executable instructions which, when executed by a processing system, causes a data processing system to perform a method for transcoding a source structured document in a markup language for a browser to render a display page while satisfying constraints from a display area and processing capacity of a browser device, the constraints including a plurality of layout constraints, the method comprising:

building a document tree from the source structured document;

assigning one or more layout constraints and sizing parameters to a plurality of tree nodes of the document tree;

splitting or partitioning an oversized tree node of the plurality of tree nodes into one or more new tree nodes of new document trees that of tree nodes satisfy one of the plurality of layout constraints, wherein the new document trees are hierarchically linked; and

ordering the new document trees in an order consistent with a two-dimensional navigation sequence of a display page for the source structured document, wherein at least one new tree node of the new document trees including sizing attributes scalable to satisfy the constraints for at least one of the new document trees to produce one structured data such that it is suitable for input to the browser, wherein the at least one new document tree comprises one or more tree nodes including one root node and more leaf nodes, each new tree node except the root node having a single parent node in the one or more new tree nodes, each of the one or more new tree nodes except the one or more leaf nodes having at least one child node in the one or more new tree nodes, and each leaf node belonging to no more than one of the new

document trees.

44. (Canceled)

45. (Currently Amended) The computer readable medium of claim 40, wherein the

generating the source document comprises executing executable codes included in the

document element to provide dynamic document elements in the source document.

46. (Currently Amended) The computer readable medium of claim 40, wherein the

generating the source document comprises retrieving the source document based on a link

data included in the document element.

47. (Previously Presented) The computer readable medium of claim 43 wherein the

partitioning comprises

      selecting a set of descendant nodes of the second oversized tree node such that

            at least one selected descendant node is associated with at

               least one of the one or more layout constraints assigned to the second

               oversized tree node;

      establishing a partition tree by copying or relocating corresponding tree nodes from

            the document tree to the partition tree such that

               (i) at least one sub tree rooted at one of the selected set of

                    descendant nodes gets removed from the document tree;

               (ii) an ancestor tree node of the one of the selected set of descendant

                    nodes has more than one child nodes copied from the

document tree; and

(iii) ordering relationships among tree nodes of the partition tree is

the same as that of the corresponding tree nodes in the

document tree; and

inserting cross linking nodes to the partition tree and the document tree

to create a corresponding hierarchical linking relationship.

48. (Previously Presented) The computer readable medium of claim 41 further comprising:

assigning a target browser display width to the root node of at least one the

new document tree as a maximum width allowed for the root node;

deciding a maximum width allowed for at least one new tree node of the at

least one new document tree given a maximum width allowed for its

single parent node such that a minimum width sizing parameter assigned to

the single parent node has a value no greater than the given maximum

width;

determining a scaling factor for the at least one new tree node; and

applying the scaling factor to sizing attributes of new document elements

associated with the at least one new tree node.

49. (Previously Presented) The computer readable medium of claim 40 wherein the

generating a plurality of new document trees comprises converting at least one tree nodes

to at least one new tree nodes associated with one or more new document elements, the one

or more new document elements being associated with a second markup language.

50. (Previously Presented) The computer readable medium of claim 40 wherein the markup language is HTML.

51. (Previously Presented) The computer readable medium of claim 49 wherein the second markup language is HTML, CHTML, XHTML, XML, WML or HDML.

52. (Previously Presented) The computer readable medium of claim 43 wherein the one or more layout constraints assigned to the plurality of tree nodes include a vertical column or a horizontal row over a set of descendant nodes of one of the plurality of tree nodes.

53. (Previously Presented) The computer readable medium of claim 43 wherein the sizing parameters comprise a scalable width, a minimum width, an image area and a character number.

54. (Previously Presented) The computer readable medium of claim 43 wherein one of the sizing parameters assigned to one of the plurality of tree nodes is a cumulative summation of corresponding values of the same sizing parameter of one or more of its child nodes.

55. (Previously Presented) The computer readable medium of claim 52 wherein a value of the one of the sizing parameters is determined as a cumulative summation, over a set of the one or more layout constraints assigned to the one of the plurality of tree nodes, of maximum corresponding value of the same sizing parameter within the set of descendant nodes associated with the set of the one or more layout constraints.

56. (Previously Presented) The computer readable medium of claim 52 wherein one of the sizing parameters assigned to the one of the plurality of tree nodes has a value no less than at least one corresponding value of the same sizing parameter of the set of descendant nodes associated with the vertical column constraint said.

57. (Previously Presented) The computer readable medium of claim 52 wherein one of the sizing parameters assigned to the one of the plurality of tree nodes has a value no less than a cumulative summation of at least one corresponding value of the same sizing parameter of the set of descendant nodes associated with the horizontal row constraint.

58. (Previously Presented) The computer readable medium of claim 53 wherein the minimum width sizing parameter of the oversized tree node has a value exceeding a width threshold value associated with the one of the plurality of layout constraints.

59. (Previously Presented) The computer readable medium of claim 52 wherein the splitting or partitioning modifies the horizontal row layout constraint assigned to the oversized tree node.

60. (Previously Presented) The computer readable medium of claim 40 wherein the generating a plurality of new document trees comprises composing a catalog document tree, containing tree nodes linked to the new document trees, to provide a summary sizing information for at least one new document tree and the hierarchical linking relationship amongst the new document trees.

61. (Previously Presented) The computer readable medium of claim 40 wherein the structured data is a structured document in a second markup language.

62. (Previously Presented) The computer readable medium of claim 40 wherein the browser device is palmtops, PDAs or data-enabled cell phones wirelessly connected with a small display areas and processing capacities.

63. (Currently Amended) The method of claim 1, wherein ~~the document elements has an order according to the source document and the updated structured document, wherein the new document elements are ordered according to the order, and wherein~~ the updated structured document includes a third ordered list of document elements having an order according to the first ordered list of document elements and the second ordered list of document elements, wherein the new document trees are ordered based on ~~an~~ the order ~~of the new document elements~~.

64. (Currently Amended) The method of claim 63, wherein the new document trees include a first new document tree and a second new document tree, the first new document tree having a first new document tree node associated with first new document elements converted from first document elements of the updated structured document ~~elements~~, the second new document tree having a second new document tree node associated with second new document elements converted from second document elements of the updated structured document ~~elements~~, and wherein ~~the order of the new document tree between~~ the first new document tree and the second new document tree are ordered in the new

document tree according to ~~is based on the order of document elements between~~ the first

document elements and the second document elements based on the order.

65. (Previously Presented) The method of claim 64, wherein the first new document tree

includes a new tree node associated with a hyperlink element linking the second new

document tree.

66. (Previously Presented) The method of claim 65, wherein the hyperlink element includes

an order indicator indicating an order of the second new document tree within the ordered

new document trees.

67. (Previously Presented) The method of claim 65, wherein the hyperlink element includes

a hierarchical indicator indicating a relative level of hierarchy between the first new

document tree and the second new document tree within the hierarchically linked new

document trees.

68. (Currently Amended) The computer readable medium of claim 40, wherein ~~the~~

~~document elements has an order according to the source document and the updated~~

~~structured document, wherein the new document elements are ordered according to the~~

~~order, and wherein~~ the updated structured document includes a third ordered list of

document elements having an order according to the first ordered list of document elements

and the second ordered list of document elements, wherein the new document trees are

ordered based on ~~an~~ the order ~~of the new document elements~~.

69. (Currently Amended) The computer readable medium of claim 68, wherein the new document trees include a first new document tree and a second new document tree, the first new document tree having a first new document tree node associated with first new document elements converted from first document elements of the updated structured document ~~elements~~, the second new document tree having a second new document tree node associated with second new document elements converted from second document elements of the updated structured document ~~elements~~, and wherein ~~the order of the new document tree between~~ the first new document tree and the second new document tree ~~is based on the order of document elements between~~are ordered in the new document tree according to the first document elements and the second document elements based on the order.

70. (Previously Presented) The computer readable medium of claim 69, wherein the first new document tree includes a new tree node associated with a hyperlink element linking the second new document tree.

71. (Previously Presented) The computer readable medium of claim 70, wherein the hyperlink element includes an order indicator indicating an order of the second new document tree within the ordered new document trees.

72. (Previously Presented) The computer readable medium of claim 70, wherein the hyperlink element includes a hierarchical indicator indicating a relative level of hierarchy between the first new document tree and the second new document tree within the hierarchically linked new document trees.

73. (Currently Amended) An apparatus for structured document transcoding, comprising:

means for generating in response to receiving ~~a source document from an element~~ of

a structured document including a first ordered list of document elements in

a markup language, a source document based on a document element of the

first ordered list of document elements, the source document including a

second ordered list of document elements in the markup language~~replacing~~

~~the element to update the structured document~~;

means for replacing the document element with the second ordered list of document

elements to insert the source document into the first ordered list of

document elements to update the structured document;

means for building a document tree including a plurality of tree nodes associated with

document elements ~~from the source document and~~of the updated structured

document;

means for generating a plurality of new document trees ~~from~~according to the

document tree such that the plurality of new document trees are ordered and

hierarchically linked;

means for determining sizing parameters for one or more new tree nodes of at least

one of the new document trees; and

means for producing, from the at least one of the new document trees, one structured

data such that it is suitable for ~~input to~~a browser to render in a browser

device,

wherein the one or more new tree nodes including one root node and one or more leaf

nodes, the determined sizing parameters of the root node satisfying constraints associated with a display area and processing capacity for the browser, each of the one or more new tree nodes except the root node having a single parent node belonging to the one or more new tree nodes and each of the one or more new tree nodes except the one or more leaf nodes having at least one child node belonging to one or more new tree nodes, and wherein each leaf node is associated with no more than one of the plurality of new document trees.